PEDESTRIAN BEHAVIOUR AT UNSIGNALISED ZEBRA CROSSING IN UNIVERSITY CAMPUS

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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ABSTRAK

Kepentingan ke arah mempromosikan budaya berjalan kaki telah meningkat secara dramatik terutama di bandar dan di seluruh negara. Ini juga termasuk universiti di seluruh dunia yang telah mula mencari jalan untuk meningkatkan aktiviti pejalan kaki. Oleh itu, perancang kampus mesti menangani keperluan mobiliti dan aksesibiliti pejalan kaki di komuniti mereka untuk memastikan keselamatan, fungsi dan kehidupan yang kondusif dan persekitaran pembelajaran. Walau bagaimanapun, terdapat beberapa isu yang diambil kira dalam perancangan pembangunan fizikal yang membawa kepada kegagalan dalam mewujudkan persekitaran yang kondusif. Oleh itu, kajian ini dijalankan untuk menilai keutamaan pejalan kaki, persepsi dan tingkah laku terhadap kemudahan pejalan kaki di persekitaran universiti. Dalam skop kajian ini, kemudahan pejalan kaki iaitu lintasan zebra yang tiada lampu isyarat di UMP Gambang dan IIUM Kuantan dipilih sebagai lokasi kajian. Kajian ini dijalankan menggunakan pendekatan kualitatif dan kuantitatif melalui pengumpulan soal selidik dan pengumpulan data daripada perakam video. Kemudian Kaedah Indeks Purata dilakukan untuk menunjukkan keutamaan dan persepsi pejalan kaki ke arah kemudahan pejalan kaki. Di samping itu, analisis deskriptif tingkah laku pejalan kaki juga telah dianalisis. Dapatan menunjukkan pelajar bersetuju bahawa menggunakan lintasan pejalan kaki menjimatkan masa pejalan kaki dan lebih selamat walaupun pada waktu malam. Selain itu, pelajar IIUM kebanyakannya tidak suka menyeberang di lintasan pejalan kaki yang ditetapkan berbanding dengan pelajar UMP kerana lokasi yang tidak strategik dan bilangan lintasan penjalan kaki tidak mencukupi. Kelajuan rata lelaki pejalan kaki jauh lebih tinggi berbanding pejalan kaki wanita di kedua-dua universiti. Waktu menunggu untuk kebanyakan pejalan kaki adalah sangat cepat serendah 2 saat antara kedua-dua kampus. Purata kelajuan berjalan seseorang lebih tinggi berbanding berjalan dengan tiga orang dalam satu kumpulan atau ramai orang di antara kedua-dua kampus. Dengan menggunakan kaedah statistik t-ujian, nilai P dua ekor yang signifikan adalah kurang daripada 0.05. Oleh itu, terdapat perbezaan yang signifikan secara statistik antara UMP dan IIUM dari segi pengedaran laju.

ABSTRACT

The interest toward promoting walking culture has been increased dramatically especially in many cities across the nation. This is also includes universities worldwide that have started seeking ways to increase pedestrian activities. Hence, campus planners must address the mobility and accessibility needs of pedestrian in their communities to ensure safety, functionality and conducive living and learning environment. However, there are several issues accounted in physical development planning that lead to failure in creating a conducive environment. Therefore, this study was conducted to evaluate the pedestrian preference, perception and behaviour towards the pedestrian facilities in university environment. In this scope of this study, the unsignalised zebra crossing in UMP Gambang and IIUM Kuantan was selected as study location. This study was conducted using qualitative and quantitative approaches by means of questionnaire distribution and also movement data collection. Then the Average Index Method was performed to indicate the pedestrian preference and perception towards the pedestrian facilities. In addition, the descriptive analysis of pedestrian behavior also has been analysed. Findings shows the students agree that using a pedestrian crosswalk save pedestrian time and more safety although during at night. Besides, IIUM student mostly not prefer to cross at designated pedestrian crosswalk compared with UMP students due to the locations not strategic and the numbers of crosswalk are not adequate. The mean speed of male pedestrian is significantly higher compared to female pedestrian in both universities. The waiting time for most pedestrian was very promptly as low as 2 seconds between both campuses. The mean walking speed of an individual is significantly higher compared to the group of three or more people between both campuses. By using statistical method of t-test, the significant two-tailed P value is less than 0.05. So, there is a statistically significant difference between UMP and IIUM in terms of speed distribution.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS

N	Sample Size

LIST OF ABBREVIATIONS

UMP	Universiti Malaysia Pahang
IIUM	International Islamic University Malaysia
UITM	Universiti Teknologi Mara
FFS	Free Flow Speed
BFFS	Base Free Flow Speed
HCM	Highway Capacity Manual

CHAPTER 1

INTRODUCTION

1.1 Research Background

The goal of a transportation system is to provide safe and efficient mobility and access to different modes of travel to a wide variety of travellers with diverse needs. In University transportation systems balance the needs of a variety of travel modes, but pedestrian and bicycle safety are fundamental to creating an attractive campus environment. Universities worldwide are pledging to provide conducive living and learning environments for their students and staff, and so the mobility of campus users is a challenge that many large universities must address as part of their sustainable campus initiatives. University can be seen as small town where movements of goods and peoples inside the campus are massive. Along with this university growth, the developments of the transportation system are concern, due to its significant effects on the congestion, environment, and safety issue. As all the safety issue are becoming problems worldwide, the interest toward promoting non-motorized travel options by means of walking has been increased dramatically especially in many cities across the nation.

Road accidents is major public health concern in Malaysia where based on Rizati, Azzuhana, & Rohayu (2017) mortality rate of pedestrians is the third highest after motorcyclists and car drivers. The severity of the injury sustained by a pedestrian depends on type of vehicle, impact speed, size of vehicle and age of the pedestrian (World Health Organization, 2013). According to Makki (2012) campus walkability is an important component of campus mobility because these users need to have access to a network of connected, direct and easy to follow routes, linking the hostel, faculties,

green spaces, public transport stops and other facilities that will enhance their campus experience, which is based on safety, functionality, pleasure and learning.

Walking is a key non-motorized mode of transport used by pedestrians that connects different components of a multimodal transport network and interfaces with external activity areas. Walking has many health benefits and no cost which is important for students with small budgets (Zohreh, Mehdi, & Muhammad Zaly, 2014). Pedestrian is a person travelling on foot, whether walking or running. In some communities, those traveling using tiny wheels such as roller skates, skateboards, and scooters, as well as wheelchair users are also included as pedestrians.

The pedestrian is often the most vulnerable road user of all transportation networks users, and frequently, the most overlooked. Since walking is a major contributor to a sustainable transport strategy, it requires special attention. Yet pedestrian can still claim to be the most forgotten and neglected user group. Pedestrian do not need a license to use the roads, they are a mobile group and are generally able to go almost anywhere. Pedestrians are dispersed across the road network and can be seen all time, day and night, in all weathers, and on all types of roads.

For pedestrian crossing or crosswalk is a place designated for pedestrians to cross a road. Crosswalks are designed to keep pedestrians together where they can be seen by motorists, and where they can cross most safely across the flow of vehicular traffic. Marked pedestrian crossings are often found at intersections, but may also be at other points on busy roads that would otherwise be too unsafe to cross without assistance due to vehicle numbers, speed or road widths. They are also commonly installed where large numbers of pedestrians are attempting to cross or where vulnerable road users regularly cross. Rules govern usage of the pedestrian crossings to ensure safety for example in some areas, the pedestrian must be more than halfway across the crosswalk before the driver proceeds.

To identify the existing condition of the pedestrian mode, the pedestrian characteristics for various pedestrian facilities need to be investigated. Most of the crossing inside campus is a zebra crossing. So, this study just focuses on zebra crossing near bus stop in campus.

1.2 Problem Statement

University Malaysia Pahang's campus core has a solid network of sidewalks, crosswalks, and interior walkways. The largest barriers to pedestrians that were discussed during input sessions and observed included automobile speeds, lighting issues, no pedestrian roof and a lack of crosswalks in campus (Dr. Tom V. Mathew, 2014). This investigation studies the influence pattern of the gender and age of pedestrians' behaviour and pedestrian crossing attributes at one lane position on the pedestrian crosswalk at UMP Gambang and IIUM Kuantan.

One of the common problems facing by pedestrians was the difficulty of crossing the road. As stated by Zhao & Chen (2017), crossing lane by lane indicates that pedestrians fail to complete the crossing in one sequence because of interference from vehicles, so they must stop and stand between lanes, waiting for a sufficient time gap before they continue crossing. Because of the problem that, there have been 30 crashes involving pedestrians or bicycles at Clemson University between 2001 and 2008, the most extreme in the Spring of 2007 when a student was involved in a crash with a transit vehicle while crossing the street within a crosswalk on campus resulting in severe injuries (Sarasua & Chowdhury, 2009). Therefore, this investigation attempts to investigate the crossing characteristics in UMP Gambang and IIUM Kuantan and to provide the basis for assessing pedestrian crossing safety.

1.3 Research Objective

The aim and objective of this case study is to study on pedestrian behaviour and pedestrian flow characteristics for UMP Gambang, and IIUM Kuantan. To achieve the aim of this study, the following objectives have been set as:

i. To evaluate pedestrians preference and perception towards unsignalised zebra crossing.
ii. To analyses pedestrian crossing behaviour at unsignalised zebra crossing.

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